AMENDMENTS TO THE CLAIMS

(The following includes a complete listing of all claims with their current status indicated. Additional language is underscored; deletions are stricken through.)

1. (Previously Amended) A method of forming a dielectric layer on a semiconductor device comprising:

providing a substrate having at least one semiconductor layer;

forming a first conductive layer over at least a portion of the substrate;

depositing a silicon-containing material from a silicon source comprising a silazane on the first conductive layer;

forming the dielectric layer by processing the deposited silicon-containing material with a reactive agent selected to react with silicon atoms of the deposited silicon-containing material; and

forming a second conductive layer over the dielectric layer.

2. (Canceled)

3. (Previously Amended) A method of forming a dielectric layer on a semiconductor device comprising:

providing a substrate having at least one semiconductor layer;

forming a first conductive layer over at least a portion of the substrate;

depositing a silicon-containing material from a silicon source selected from the group consisting of hexamethyldisilazane, tetramethyldisilazane, octamethylcyclotetrasilazine, hexamethylcyclotrisilazine, diethylaminotrimethylsilane and dimethylaminotrimethylsilane.

4. (Original) The method of claim 1, wherein the silicon source comprises a self limiting hexamethyldisilazane source.

5. (Original) The method of claim 1, wherein the reactive agent is selected from the group comprising NH_3, N_2, O_2, O_3, N_2O and NO.

6. (Original) The method of claim 1, wherein the dielectric layer is primarily nitride.

7. (Original) The method of claim 1, wherein the dielectric layer is primarily oxide.

8. (Original) The method of claim 1, wherein the dielectric layer is about 45Å or less in thickness.

9. (Original) A method of forming a dielectric layer on a semiconductor device comprising:

providing a substrate having at least one semiconductor layer;

fabricating the semiconductor device proximate to the substrate;

vapor depositing a silicon-containing material from a silazane source over at least a portion of the semiconductor device; and

forming the dielectric layer by processing the silicon-containing material in a reactive ambient.

10. (Original) The method of claim 9, wherein vapor depositing a silicon-containing material from a silazane source over at least a portion of the semiconductor device is repeated at least once prior to forming the dielectric layer by processing the silicon-containing material in a reactive ambient.

11. (Original) The method of claim 9, wherein the reactive ambient is NH_3.

12. (Original) A method of forming a dielectric layer comprising:

providing a substrate having at least one semiconductor layer;

vapor depositing a silicon-containing material from a self limiting silicon source on at least a portion of the substrate, wherein said portion of said substrate is conductive; and

forming the dielectric layer by processing the silicon-containing material in a reactive ambient at a processing temperature, a processing time and a processing pressure selected to result in a desired dielectric constant and leakage characteristics.

13. through 25. (Canceled)

26. (Previously Amended) A method of forming a dielectric layer comprising:

providing a substrate having at least one semiconductor layer;

depositing a silicon-containing material from a silicon source comprising a silazane on at least a portion of the substrate, wherein said portion of said substrate is conductive; and

forming the dielectric layer by processing the silicon-containing material in a reactive ambient.

27. (Original) A method as claimed in claim 26 wherein said silicon source is self-limiting.

28. (Original) A method as claimed in claim 26 wherein said silicon-containing material is deposited in a plurality of layers.

29. (Original) A method as claimed in claim 26 including depositing a second dielectric layer over the dielectric layer.

30. (Original) A method as claimed in claim 26 wherein the silicon-containing material is vapor deposited.

31. (Previously Amended) A method of forming a dielectric layer comprising:

providing a substrate having at least one semiconductor layer;

vapor depositing a silicon-containing material comprising a silazane on at least a portion of the substrate; and

forming a dielectric layer by rapidly thermally nitridizing the deposited silicon-containing material in a nitridizing agent.

32. (Original) A method as claimed in claim 31 including depositing a second dielectric layer over the dielectric layer.